Government of Zambia Smarter Futures Workshop
Cost Benefit Analysis Workshop
11 - 12 May 2017

Cost Benefit Analysis
Maize Flour Fortification
Cost and Economic Benefits to Zambia

Presented by:

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Food Fortification Initiative
Enhancing Grains for Healthier Lives

Rationale

- Development of cost benefit case for maize flour fortification
- Advocacy to private sector, milling industry and government
- Provide an opportunity to economists to compare maize flour fortification to other government programmes and health interventions
- Use as an advocacy tool for policy makers in Government Ministries

Workshop objectives

- To carry out a cost benefit analysis of maize flour fortification in Zambia using an Excel Spreadsheet tool
- To demonstrate that a public health intervention of maize flour fortification has both a health benefit and an economic benefit for the national population
- To demonstrate the importance of an effective monitoring system for compliance of the law by both millers and importers
- To sensitize Millers and government officers on the economic benefits of flour fortification

Methodology

- 2 days Meeting

- Participants

  - Industry - Millers

  - Government officers (Ministry of Health, Ministry of Commerce, Trade and Industry; Ministry of National Development Planning:

  - Development partners

- 13 - 18 people
- Data collection by country teams prior to the workshop
- Country data and statistics
- Reviewed spreadsheet calculations and revised where necessary required

Workshop Process - Determination of Economic Losses

- Objective: Determine the costs of doing nothing

- Estimate and validate country health statistics
  - Iron: Iron Deficiency, Iron Deficiency Anemia
  - Folic Acid: Neural Tube Defects (NTDs) and deaths
  - Vitamin A deficiency

- Estimate Economic Losses
  - Iron deficiencies cause loss in economic productivity
  - Folic Acid deficiencies cause increase to health care costs and economic burden on families for additional healthcare costs

Examples of Economic losses
The National Burden of IDA, VAD & NTD

1. Child Mortality Cost of IDA, VAD
2. Neo-Natal Mortality Cost of IDA in Pregnant Women
3. Maternal Mortality Cost of IDA in Pregnant Women
4. Mortality & Disability Cost of NTDs
5. Future Productivity Loss Due to Cognitive Deficits in Children
6. Current Productivity Loss Due to Anemia in Adult Women and Men
7. Summary: Financial losses

Source: Jack Bagriansky
IDA = iron deficiency anemia
VAD = vitamin A deficiency
NTD = neural tube defect

Cost Benefit Analysis: General Algorithm

- **General Algorithm**

General Algorithm for Projection of Economic Losses											
Risk Group Population		Prevalence of Condition		Population with Deficit		Economically Population		Average Annual Wage		Coefficient Of Deficit or Loss		Lost Productive Activity
# National Statistics	X	% from NNS	=	By Indicator and Risk Group	X	% of total Population	X	Per Year	X	% or RR From Global Literature	=	$/year

Cost Benefit Analysis: Scope

- Following five health conditions covered:

Neural Tube Defects (NTD)
Neonatal Deaths
Maternal Mortality
Children's Productivity Loss due to Iron Deficiency Anemia (IDA)
Adult's Productivity Loss due to IDA

- Fortification intervention covered – Maize Flour Fortification

Zambia Burden of Disease Economic Losses

Summary Economic Consequences for All Indicators						
	Lost Workforce	Lost Future Productivity	Lost Current Productivity	Current Healthcare Costs	Total	
	000,000/yr	000,000/yr	000,000/yr	000,000/yr	000,000/yr	%
Maternal Mortality	$19.2				$19.16	9%
Neo Natal Mortality	$25.0				$24.98	11%
NTD	$13.9	$0.8		$0.14	$14.75	7%
Childhood IDA		$84.1			$84.06	38%
VAD	$41.0				$40.99	19%
IDA in Adults			$34.6		$34.62	16%
Total	$99.0	$84.8	$34.6		$218.56	100%
	45%	39%	16%		% of GDP	0.99%

Fortification Costs at the Mill and Government

- Feeders
- Premixes: Wheat and Maize flour
- Mill QA/QC
- Food Control Costs: Inspections and Laboratory tests

Zambia Cost of Fortification – Maize flour

	Premix Cost	Industry Cost	Government Cost	Total
				$000,000
2017	$1,250,929	$672,760	$645,000	$2.57
2018	$2,705,760	$942,915	$145,000	$3.79
2019	$3,109,172	$963,086	$195,000	$4.27
2020	$3,362,569	$975,756	$145,000	$4.48
2021	$3,850,537	$1,000,154	$195,000	$5.05
2022	$4,164,356	$1,015,845	$245,000	$5.43
2023	$4,653,876	$1,040,321	$195,000	$5.89
2024	$5,033,167	$1,059,286	$145,000	$6.24
2025	$5,560,432	$1,085,649	$195,000	$6.84
2026	$6,013,607	$1,108,308	$145,000	$7.27
	$39,704,405	$9,864,080	$2,250,000	$51.8

Cost Benefit Analysis – Zambia Result

	Cost	Benefit	Benefit Cost Ratio	Notes
	$000,000	$000,000		Assume Benefits take 12 months accrue
2017	$2.6	$0.0	-	Assume 6 Months fortification and no benefit in Year 1
2018	$3.8	$12.3	3.2	Benefits Begin after 6 months (50%)
2019	$4.3	$26.2	6.1	
2020	$4.5	$29.7	6.6	
2021	$5.0	$31.7	6.3	
2022	$5.4	$35.8	6.6	
2023	$5.9	$38.1	6.5	
2024	$6.2	$42.0	6.7	
2025	$6.8	$44.8	6.5	
2026		$48.8		No Cost Applied as Benefits taken in 2026
TOTAL	$44.6	$309.4	6.9	

ZAMBIA - CBA OUTCOME

Every 1 Kwacha invested in maize flour fortification in Zambia has the potential to return 6.9 Kwacha to the economy of Zambia through improved health and higher productivity

Zambia Cost Benefit Analysis
Cost of Fortification

- Cost of Fortification per Ton:
  20 Kw Zambian or $ 2.20
- Cost of Fortification per 25kg bag:
  2.4 Kw Zambian or $ 0.06
- Fortifiable Maize Flour Consumption 3 x 25 kg per person per year 75kg
- **Fortification Cost per person per year: 72 Kw = $ 7.91**

For More Information

Ministry of Health - Zambia
www.smarterfutures.net

www.FFInetwork.org

https://twitter.com/FFINetwork

www.Facebook.com/FFInetwork

Join the Food Fortification Initiative group on Linked In

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